

CABI BIOSCIENCE
FORTHAM LIBRARY

BIOLOGICAL JOURNAL

of the Linnean Society

VOLUME 56

NUMBERS 1-4

PAGES 1-596

THE LINNEAN SOCIETY OF LONDON
BURLINGTON HOUSE, PICCADILLY, LONDON W1V 0LQ
1996

Dates of publication of the numbers included in Vol. 56:

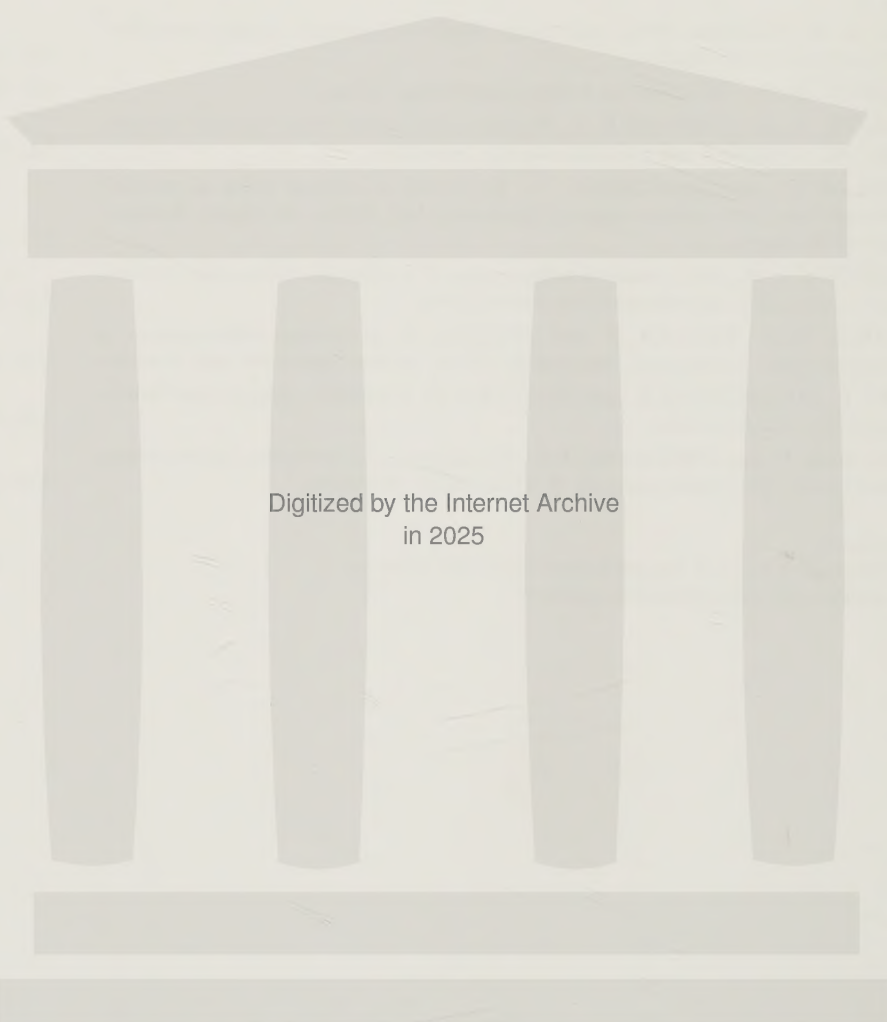
Nos. 1 & 2, pp. 1–422, 10 October 1995

No. 3, pp. 423–503, 4 January 1996

No. 4, pp. 505–596, 23 January 1996

CONTENTS

	<i>Pages</i>
Nos 1 & 2	
The Pitcairn Islands: biogeography, ecology and prehistory	1-422
Contents and Index published separately	
Nos 3 & 4	
FINK, L. S., Foodplant effects on colour morphs of <i>Eumorpha fasciata</i> caterpillars (Lepidoptera: Sphingidae).	423-437
FREEMAN, P. W., Nectarivorous feeding mechanisms in bats.	439-463
KREBS, R. A. and LOESCHKE, V., Resistance to thermal stress in adult <i>Drosophila</i> <i>buzzatii</i> : acclimation and variation among populations	505-515
KREBS, R. A. and LOESCHKE, V., Resistance to thermal stress in preadult <i>Drosophila buzzatii</i> : variation among populations and changes in relative resistance across life stages	517-531
MCKINNEY, F. K., One hundred million years of competitive interactions between bryozoan clades: asymmetrical but not escalating	456-481
PONDER, W. F., EGGLE, P. and COLGAN, D. J., Genetic differentiation of aquatic snails (Gastropoda: Hydrobiidae) from artesian springs in arid Australia	553-596
SEPPÄ, P., SUNDSTRÖM, L. and PUNTILA, P., Facultative polygyny and habitat succession in boreal ants	533-551
TRAN, B. M. D. and CREDLAND, P. F., Consequences of inbreeding for the cowpea seed beetle, <i>Callosobruchus maculatus</i> (F.) (Coleoptera: Bruchidae)	483-503
Supplement A	
The National Trust and Nature Conservation 100 years on	1-248
Contents and Index published separately	



Digitized by the Internet Archive
in 2025

INDEX

compiled by Stanley Thorley

Abbreviations:

App. – Appendix

Fig. – Figure

n. – note

Tab. – Table

*signifies a keyword

- α -glycerophosphate dehydrogenase (*GPD*: E. C. No. 1.1.1.8.)
 genetics of artesian spring snails: loci 557 Tab. 1
Gpd 587 App. 2.1, 590 App. 2.3, 594 App. 2.5, 596 App. 2.6, 566
 polygyny in ants: loci *aGpdh-1* & *aGpdh-2* 540 Tab. 2, 550–551 App.
- aardvarks: feeding mechanisms 452
- aardwolves: feeding mechanisms 452
- *acclimation: heat shock
 preadult *Drosophila* 517
 response in adult *Drosophila* 505–507, 512–513
- Acerodon jubatus*: feeding mechanisms 462 App. 1
- Acherontia* (Sphingini): correlation between foodplant and caterpillar morphs
A. atropis 433 Tab. 3
A. lachesis 433 Tab. 3
- aconitase (E. C. No. 4.2.1.3.): polygyny in ants:
 locus *Aco* 540 Tab. 2, 551 App.
- acridid grasshoppers: polymorphic correlations 434
- adaptations, cranio-dental: feeding mechanisms in bats 439–440
- *adaptive colouration: foodplant effects on polymorphic caterpillars 423, 426, 432
- Adriatic, northern: competitive interactions between bryozoans 468, 470 Fig. 1, 481 App.
- Aellopos ceculus* (Smerinthini): correlation between foodplant and caterpillar morphs 433 Tab. 3
- Africa: cowpea seed beetles
Bruchidius atrolineatus 501
Callosobruchus maculatus 484
- Ahvenkangas, Finland: polygyny in ants 538 Tab. 1
- Albian age: Bryozoa 469, 471 Tab. 1, 480 App.
- algae: encrusting bryozoan competitors 473
- alleles
 genetics of artesian spring snails 557, 562, 565, 580
 polygyny in ants 539–541, 550–551 App.
- *allozymes: genetics of artesian spring snails 553–554, 568, 571, 587–596 Apps 2.1–2.6
- America
 Central *see* Jamaica
 North
 bryozoan collections 469
see also Canada and U.S.A.
 Hydrobidae 554
 South *see* Argentina, Brazil and Peru
- Ametrida centurio*: feeding mechanisms 462 App. 1
- Ampelopsis arborea*: effects on *Amphion floridensis* 433
- Amphion floridensis*: foodplant effects on polymorphic caterpillars 433 & Tab. 3, 435
- amphipods, Antarctic: grazing on *Homera* (cyclostomes) 475
- analyses
 feeding mechanisms in bats 441–442, 445 Fig. 3
see also measurements, medians, percentiles, principal components and regressions
 genetics of artesian spring snails 558–559, 564, 580, 582
see also ANOVA, cladistic, discriminant, phenetic and regression analyses
 heat shock
 preadult *Drosophila* 519–520, 529
 response in adult *Drosophila* 506–508, 513
 inbreeding of *Callosobruchus maculatus* 488–489
 multiple discriminant 489–494 & Tabs 1–4 & Figs 1–2, 497, 499
 polygyny in ants 534, 538
- ancestors
 feeding mechanisms in bats 439, 453, 456–457, 459
 inbreeding of *Callosobruchus maculatus* 483, 485–486, 489, 491–495 & Figs 2–3, 498–499, 501
- angiosperms: diversification 473
- animalivory: feeding mechanisms in bats 439–441, 443–448 & Figs 1–5, 450–457 & Fig. 6, 459, 462 App. 1
- Anoura*: feeding mechanisms in bats 449, 456–457
A. caudifer 450 Fig. 7, 462 App. 1
A. geoffroyi 450 Fig. 7, 462 App. 1
- ANOVA (analysis of variance)
 genetics of artesian spring snails 576–577
 heat shock
 preadult *Drosophila* 523–525 Tabs 1–4
 response in adult *Drosophila* 508–510 & Tab. 1, 513
 inbreeding of *Callosobruchus maculatus* 489, 494, 496
- anteaters: feeding mechanisms 452, 458
- anthocyanin pigments: differences in green and nongreen larvae 426
- ants: facultative polygyny 533–551 & Figs 1–2 & Tabs 1–2 & App.
see also *Formica*, *Leptothorax* and *Myrmica*
- aphids: food affecting morph determination 432

- arc sine transformations
Callosobruchus maculatus egg distributions 488, 496
 preadult *Drosophila* 520
 response in adult *Drosophila* 508
- Argentina (ARG): heat shock
 preadult *Drosophila* 518, 520–526 & Figs 1–6, 528
 Tab. 6, 530
 response in adult *Drosophila* 507, 509–511 & Figs
 1–2, 513
- Arizona: northern limit of *Eumorpha fasciata* range 426
- armadillos: feeding mechanisms 452
- Artibeus*: feeding mechanisms in bats
A. jamaicensis 446 Fig. 4, 452, 462 App. 1
A. lituratus 462 App. 1
A. phaeotis 462 App. 1
A. spp. 149 Fig. 6
A. toltecus 462 App. 1
- ascidians: encrusting bryozoan competitors 473
- aspartate aminotransferase (AAT: E.C. No. 2.6.1.1.):
 genetics of artesian spring snails: loci 557 Tab. 1
 AAT-2 570
Aat-1 & *Aat-2* 587–588 Apps 2.1–2.2,
 590 App. 2.3, 592 App. 2.4, 594 App. 2.5
Aat-2 596 App. 2.6
- asteroid *Pateria miniat*: bryozoan grazing 475
- Australia
 artesian spring snails 553–554, 580, 584
see also Great Artesian Basin and Lake Eyre
 Supergroup
 heat shock
 preadult *Drosophila* 518, 529–530
 response in adult *Drosophila* 506–507
see also Bulla, Dixalea, Metz Gorge and Oxford
 Downs
- β -hydroxybutyrate dehydrogenase (HBDH: E. C. No.
 1.1.1.30.): genetics of artesian spring snails: loci
 557 Tab. 1
hbdh 596 App. 2.6
- Bartlett-Box *F*-tests: inbreeding of *Callosobruchus*
maculatus 488–489, 494–496
- Bartonian age: Bryozoa 471 Tab. 1, 481 App.
 Bartonian-Priabonnan 470 Fig. 1
- *bats: feeding mechanisms 439–463 & Figs 1–7 &
 Apps 1–2
- beetles, cowpea seed
Bruchidius atrolineatus 501
Callosobruchus maculatus 483–503 & Figs 1–2 &
 Tabs 1–7
C. chinensis 484, 499–501
- Beresford Springs (BS): genetics of artesian spring
 snails 553, 558 Fig. 1, 577, 581, 584, 586 App. 1
Fonscochlea populations 560 Tabs 3–4, 562–567 &
 Figs 7 & 9, 569–570 & Fig. 12
 BS22 563 Figs 5–6, 565 Fig. 8, 567 Fig. 10, 569
 Fig. 11, 586 App. 1, 588–593 Apps 2.2–2.4
Trochidobia populations 571–572, 574 & Fig. 17,
 576
 BS22 573 Figs 15–16, 596 App. 2.6
- Big Cadnaowie Spring: Australian artesian 570
- Billa Kallina Springs (BK): genetics of artesian spring
 snails 558 Fig. 1, 580–581, 583, 586 App. 1
Fonscochlea populations 560 Tab. 4, 562, 564–565,
 568–570 & Fig. 12, 591 App. 2.3, 593 App.
 2.4
 BK18 565 Fig. 8, 567 Fig. 10, 569 Fig. 11,
 586 App. 1, 592–593 App. 2.4
- Trochidobia* populations 574 Fig. 17
 BK18 573 Figs 15–16, 596 App. 2.6
- BIOSYS-1 package: genetics of artesian spring snails
 557
- birds: Australian artesian springs 581–582
- bivalve shells: encrusting Bryozoa 468
- Blanche Cup Springs (BC): genetics of artesian spring
 snails 558 Fig. 1, 576–577, 580–582, 586 App. 1
Fonscochlea populations 560 Tabs 3–4, 562–570 &
 Figs 7 & 9, 588–593 Apps 2.2–2.4
 BC13, BC14, BC15 & BC16 565 Fig. 8, 567 Fig.
 10, 586 App. 1, 588–591 Apps 2.2–2.3
 BC13, BC15 & BC16 Figs 5–6
 BC13 & BC14 567 Fig. 10, 569 Fig. 11, 592–593
 App. 2.4
 BC16 565, 568
- Trochidobia* populations 572 Fig. 14, 574 & Fig. 17,
 594–596 Apps 2.5–2.6
 BC13, BC14 & BC15 573 Fig. 15, 594–595 App.
 2.5
 BC13 & BC15 571 Fig. 13, 573 Fig. 15
 BC14 571, 573 Fig. 16, 596 App. 2.6
- Bonferroni adjustment: ANOVA 577
- bottlenecks: inbreeding of *Callosobruchus maculatus* 484,
 501–502
- brachiopod zone: encrusting Bryozoa 468, 481 App.
- Brachyphylla*: feeding mechanisms in bats 441, 448,
 453, 458
B. cavernarum 446 Fig. 4, 454, 462 App. 1
B. nana 454, 462 App. 1
- Brazil
 origin of studied population of *Callosobruchus*
maculatus 486
 predominance of green larvae 426
- *Bruchidae: consequences of inbreeding *Callosobruchus*
maculatus 483–484, 499
- Bruchidius atrolineatus*: cowpea seed beetles 501
- Bryozoa: competitive interactions 468, 472–473,
 475–476
 ctenostome 473
see also Cheirostomata and Cyclostomata
- budding: competitive interactions between bryozoans
 472
- Bulla (BU): heat shock
 preadult *Drosophila* 518, 521–526 & Figs 1–6, 528 &
 Tab. 6, 530
 response in adult *Drosophila* 506–507, 509 Fig. 1,
 511–512 & Fig. 2
- butterflies
 dimorphism: danaid, pierid and swallowtail 432
 polymorphism: pupal correlations 424
- caenogastropod family Hydrobiidae: artesian spring
 snails 554
- **Callosobruchus maculatus*: consequences of inbreeding
 483–502 & Tabs 1–7 & Figs 1–2
C. chinensis 484, 499–501
- Campanian age: Bryozoa 471 Tab. 1, 481 App.
- Camponotus herculeanus*: polygyny in ants 536
- Canada, Ontario: northern limit of *Ludwigia* 426
- Canary Islands (CI): heat shock
 preadult *Drosophila* 518, 520–526 & Figs 1–6,
 528–529 & Tab. 6
 response in adult *Drosophila* 507, 509 Fig. 1,
 511–512 & Fig. 2

- canines: feeding mechanisms in bats 439–442, 444
 Fig. 2, 447–450 & Figs 6–7, 452, 454–459, 463 App. 2
 postcanines 440–441, 449, 452–453
- Cardioderma*: feeding mechanisms in bats 452
C. cor 453–454, 462 App. 1
- carnivory: feeding mechanisms in bats 439–440, 444, 452–455, 457–459
see also Cardioderma, Chrotopterus, Megaderma, Nycteris, Octocyon, Trachops and Vampyrum
- Carollia*: feeding mechanisms in bats 453
C. perspicillata 440, 462 App. 1
- caterpillars: foodplant effects 423–435 & Figs 1–3 & Tabs 1–3
- Cenomanian age: Bryozoa 471 Tab. 1, 480 App.
- Cenozoic: bryozoan deposits 469, 471–472 & Fig. 2, 474–475 & Fig. 3
- censuses: foodplant effects on polymorphic caterpillars 423–424, 426–430 & Fig. 2 & Tab. 2
- Centurio*: feeding mechanisms in bats
C. senex 444, 446 Fig. 4, 451–452, 462 App. 1
C. spp. 449 Fig. 6
- Chaetophractus*: long-snouted mammals 458
- chameleons: feeding mechanisms 458
- cheekteeth: feeding mechanisms in bats 439, 452–453, 455–456, 459
- Cheiromeles: feeding mechanisms in bats 450
C. torquatus 462 App. 1
- *Cheirostomata: competitive interactions between bryozoans 465, 468–469, 471–476 & Figs 2–3 & Tab. 1, 480–481 App.
see also Membraniporida and Microporella
- chi-squared tests: inbreeding of *Callosobruchus maculatus* 491 & Tab. 3, 495
- *Chiroptera: feeding mechanisms 439–440, 444 Fig. 2, 463 & Figs 1–7 & Apps 1–2
- Choeromiscus*: feeding mechanisms in bats 446 Fig. 4, 449, 457
C. godmani 450 Fig. 7, 462 App. 1
C. intermedius 446 Fig. 4, 450 Fig. 7, 462 App. 1
- Choeronycteris*: feeding mechanisms in bats 456
C. mexicana 450 Fig. 7, 462 App. 1
- Chrotopterus*: feeding mechanisms in bats 452
C. auritus 453–454, 462 App. 1
- citrus hosts: survival of *Papilio demodocus* larvae 434
- cladistic analyses
 competitive interactions between bryozoans 465–469, 472–473, 476
 genetics of artesian spring snails 557, 562–564 & Fig. 5, 567–568 & Fig. 10, 570–573 & Fig. 15, 579–580
- *Coleoptera: consequences of inbreeding *Callosobruchus maculatus* 483–484
see also beetles
- colonies: polygyny in ants 533–538 & Tab. 1, 540–541, 543–547, 550–551 App.
- colours: foodplant effects on polymorphic caterpillars 423–435 & Figs 1–3 & Tabs 1–3
see also green, multicoloured, pink, pink-and-yellow and yellow forms
- competition: interactions between bryozoans 465–468, 476
- *competition: polygyny in ants 533, 535–536, 542, 545–546
- Compsogene panopus* (Smerinthini): correlation between foodplant and caterpillar morph 433 Tab. 3
- computer packages and programs
 feeding mechanisms in bats: SIGMAPLOT and STATVIEW 442
 genetics of artesian spring snails: BIOSYS-1, PAUP and SYSTAT 557
- conclusions
 feeding mechanisms in bats 459
 genetics of artesian spring snails 584
- conditioning: heat shock
 preadult *Drosophila* 520, 526–527 & Fig. 6 & Tab. 5, 529
 response in adult *Drosophila* 505–512 & Figs 1–2 & Tabs 1–2
- condyles, dentary: feeding mechanisms in bats 441–444, 446, 451, 457–459, 463 App. 2
 condylo-canine length 443–444
- Coniacian age: Bryozoa 471 Tab. 1, 480–481 App.
 Coniacian-Santonian 471 Tab. 1, 481 App.
- *conservation: artesian spring snails 553–555
- Cordoba, Spain (COR): heat shock
 preadult *Drosophila* 518, 521–526 & Figs 1–6, 528–529 Tab. 6
 response in adult *Drosophila* 13, 507, 509–511 & Figs 1–2, 13
- correlations
 competitive interactions between bryozoans 469, 472
 feeding mechanisms in bats 442
 foodplant effects on polymorphic caterpillars 424, 432–434 & Tab. 3
 inbreeding of *Callosobruchus maculatus* 485, 496 & Tab. 4, 500
- Coward Springs (CS): genetics of artesian spring snails 558 Fig. 1, 576, 581, 586 App. 1
- Fonscochlea* populations 560 Tabs 3–4, 564 Fig. 7, 567, 569–570 & Fig. 12, 588–593 Apps 2.2–2.4
 CS17 569 Fig. 11
 CS17 & CS19 565 Fig. 8, 567 Fig. 10, 586 App. 1, 590–593 Apps 2.3–2.4
 CS19 563 Figs 5–6, 569 Fig. 11, 592–593 App. 2.4
- Fonscochlea* populations CS17 569 !f. 11
- Trochidobia* populations 571–572 & Fig. 14, 576, 594–595 App. 2.5
 CS17, CS19 576
 CS19 571 & Fig. 13, 573 Fig. 15, 576, 594–595 App. 2.5
- cowpea seed beetles
Bruchidius atrolineatus 501
Callosobruchus chinensis 484, 499–501
C. maculatus 483–502 & Tabs 1–7 & Figs 1–2
- *cranio-dental adaptations: feeding mechanisms in bats 439–441, 443–444 & Fig. 2, 447 & Figs 5, 463 & Figs 1–7 & Apps 1–2
- Cretaceous: competitive interactions between bryozoans 465–466, 468–469, 473–476 & Fig. 3
 Cretaceous-Tertiary boundary 465–466, 474
- cuckoos, European (*Cuculus canoris*): polymorphic eggs 434
- Cuculus canoris* (European cuckoo): polymorphic eggs 434

- cultures, *Callosobruchus maculatus*: origin and maintenance 486–487, 500
- *Cyclostomata: competitive interactions between bryozoans 465, 468–469, 471–476 & Figs 2–3 & Tab. 1, 480–481 App.
see also *Diplosolen*, *Homera*, *Lichenopora* and *Tubulipora*
- danaid butterflies: pupal dimorphisms 432
- Danian age: Bryozoa 471 Tab. 1, 481 App.
- Dasyypus*: long-snouted mammals 458
- Davenport Springs (DS): genetics of artesian spring snails 558 Fig. 1, 577, 580, 586 App. 1
- Fonscochlea* populations 559–562 & Tab. 3 & Fig. 4, 566 Fig. 9, 568
- DS4, DS5 561
- DS4, DS5 & DS6 561 Fig. 3, 586–587 Apps 1 & 2.1
- DS4 & DS5 561
- DS6 562, 565 Fig. 8, 567 Fig. 10, 590–591 App. 2.3
- Trochidobia* populations 572 Fig. 14
- DS4–DS6 571 Fig. 13, 573 Fig. 15, 594–595 App. 2.5
- Denmark: polygyny in ants 543
- Desmodus*: feeding mechanisms in bats 456
- *development time: heat shock in preadult *Drosophila* 517–521, 523–525 & Tab. 2 & Figs 3 & 5, 527–520
- diets: feeding mechanisms in bats 442, 451, 453–454, 456–459
see also food habits
- dilambdotodont patterns: feeding mechanisms in bats 439, 453, 456
- Dilophonotini (tribe): correlation between foodplant and caterpillar morphs 433 Tab. 3
see also *Aellopos* and *Erinnyis*
- Diplosolen obelium* (cyclostome): competitive interactions between bryozoans 470 Fig. 1
- discriminant function analysis: *Fonscochlea expandolabra* sp. nov. 568
- discussions
- competitive interactions between bryozoans 469–476 & Figs 1–3 & Tab. 1
 - feeding mechanisms in bats 450–459
 - foodplant effects on polymorphic caterpillars 432–435 & Tab. 3
 - genetics of artesian spring snails 579–584
 - heat shock
 - preadult *Drosophila* 527–530 & Fig. 6
 - response in adult *Drosophila* 511–513
 - inbreeding of *Callosobruchus maculatus* 497–502
 - polygyny in ants 543–547
- dispersal risks: polygyny in ants 533–535, 544–547
- Dixalea (DX): heat shock
- preadult *Drosophila* 518, 521–526 & Figs 1–6, 528 Tab. 6, 530
 - response in adult *Drosophila* 506–507, 509 Fig. 1, 511–512 & Fig. 2
- Dobsonia molucensis*: feeding mechanisms in bats 462 App. 1
- drift: inbreeding of *Callosobruchus maculatus* 483, 499–500
- Drosophila*: heat shock
- preadults 518–520, 528–529
 - D. buzzatii* 517–518, 521–525 & Figs 1–5, 527–530
 - D. pseudoobscura* 529
 - response in adults 506–508, 512–513
 - D. buzzatii* 506–513 & Figs 1–2
 - D. melanogaster* 506, 511–513
 - D. simulans* 512–513
 - D. subobscura* 513
- echidnas: feeding mechanisms 452, 458
- echinoderms
- bryozoan grazing 475
 - echinoid tests: substrata for encrusting Bryozoa 468, 470 Fig. 1
- ectolophs: feeding mechanisms in bats 440, 451–452, 463 App. 2
- Ectophylla*: feeding mechanisms in bats 449–450 & Figs 6–7, 452–453
- E. alba* 453, 462 App. 1
- Eggenburgian-Badenian age: Bryozoa 471 Tab. 1
- eggs
- foodplant effects on polymorphic caterpillars 423, 426–427, 432, 434–435
 - heat shock in preadult *Drosophila* 517–521 & Fig. 1, 527–529 & Tab. 6
 - inbreeding of *Callosobruchus maculatus* 487–490 & Tab. 1, 494–499 & Tab. 7, 501
- *electrophoresis: genetics of artesian spring snails 553–558 & Tab. 1, 567
- electrophoresis: polygyny in ants 538–539
- elephant trunks: feeding mechanisms 458
- Elizabeth Springs (ES): genetics of artesian spring snails 558 Fig. 1, 577, 586 App. 1
- Fonscochlea* populations 560 Tabs 3–4, 564 Fig. 7, 566–567 & Fig. 9, 569–570 & Fig. 12, 588–593 Apps 2.2–2.4
- ES20, ES21 & ES22 565 Fig. 8
- ES20 & ES21 563 Figs 6–7, 567 Fig. 10, 569 Fig. 11, 586 App. 1, 588–593 Apps 2.2–2.4
- Trochidobia* populations 572 Fig. 14, 574
- ES20 & ES21 565 Fig. 8, 571 Fig. 13, 573 Fig. 16, 594–595 App. 2.5
- Emerald Spring: *Fonscochlea* samples 560–561
- *encrusting Bryozoa: competitive interactions 465, 467–469, 471–476, 480–481 App.
- *endangered species: artesian spring snails 553
- England: polygyny in ants 543–544
- enolase (ENO: E. C. No. 4.2.1.11.): genetics of artesian spring snails: loci 557 Tab. 1
- ENO 556, 563, 566, 587–588 Apps 2.1–2.2, 590 App. 2.3, 592 App. 2.4, 594 App. 2.5, 596 App. 2.6
- enzymes
- genetics of artesian spring snails 356–357 & Tab. 1
 - Enzyme Commission Numbers (E.C. Nos) 356–357 & Tab. 1
 - see also aspartate, enolase, esterase, fumerate, glucose-phosphate, glutamate-pyruvate, α -glycerophate, β hydroxybutyrate, hexokinase, isocitrate, malate, mannose, octanol, peptidase, 6-phosphogluconate, phosphoglucomutase, purine, sorbitol and triose

- polygyny in ants 539–540 & Tab. 2
see also aconitase, α -glycerophosphate, esterase, glucose, isocitrate, malate, peptidase, phosphoglucomutase, phosphogluconate and phosphoglycerate
- Eocene: competitive interactions between bryozoans 475, 481 App.
see also Bartonian, Priabonian and Runangan ages
- Eonycteris*: feeding mechanisms in bats
E. major 462 App. 1
E. spelaea 446 Fig. 4, 449, 462 App. 1
- Epomops buettikoferi*: feeding mechanisms in bats 441, 462 App. 1
- Erinnyis ello*: foodplant effects on polymorphic caterpillars 423–424, 433 & Tab. 3
- Erophylla*: feeding mechanisms in bats 449–450 & Fig. 7, 454–456
E. sezekorni 454, 462 App. 1
- Espoo, Finland: polygyny in ants 537–538 & Tab. 1
 esterase (*EST*: *E. C. No.* 3.1.1.1)
 genetics of artesian spring snails: loci 557 Tab. 1
EST 556
EST-3 566
Est-1, *Est-2* & *Est-3* 587–588 Apps 2.1–2.2, 592 App. 2.4, 596 App. 2.6
Est-1, *Est-2* & *Est-4* 594 App. 2.5
Est-2 & *Est-3* 590 App. 2.3
Est-3 596 App. 2.6
- polygyny in ants: locus *Est-2* 540 Tab. 2, 550 App.
- estimation of genetic parameters: polygyny in ants 539–541
see also Hardy-Weinberg and jackknifing
- Eumops*: feeding mechanisms in bats
E. perotis 462 App. 1
E. underwoodi 462 App. 1
- Eumorphia*: foodplant effects on polymorphic caterpillars 426
E. eacus 426
E. fasciata 423–429 & Figs 1–2 & Tab. 1, 431–435 & Fig. 3 & Tab. 2
- Europe
 bryozoan collections 469, 480–481 App.
see also Adriatic, Canary Islands, Denmark, England, Finland, Spain and Sweden
- eutherians: feeding mechanisms 454
- evolution
 inbreeding of *Callosobruchus maculatus* 483, 485, 498, 501
 significant forces 466–467
see also macro- and microevolution
- experiments
 heat shock
 preadult *Drosophila* 519–520, 527
 response in adult *Drosophila* 507–511 & Tab. 1, 513
 inbreeding of *Callosobruchus maculatus* 486–488, 498–499, 501
- F* statistics: level of gene flow 582–583
- face shape: feeding mechanisms in bats 450–451
- *feeding mechanisms: nectarivorous bats 439–450 & Figs 1–7, 455–456
- females
Callosobruchus maculatus 484–490 & Tab. 1, 494 & Tab. 4, 496–500 & Tabs 6–7
- heat shock
 preadult *Drosophila* 519, 521–525 & Figs 3–5
 response in adult *Drosophila* 508–511 & Figs 1–2 & Tab. 1, 513
- Finland: polygyny in ants 537–539 & Tab. 1 & Fig. 1
see also Espoo, Forssa, Hyttälä, Seitsemäinen, Täkton and Ylöjärvi
- fish
 arid zone springs 554
 bryozoan grazing 475
- Fisher's exact test: foodplant effects on polymorphic caterpillars 427, 429 Fig. 2
- *fitness components: inbreeding of *Callosobruchus maculatus* 483–485, 497–501
- Florida: foodplant effects on polymorphic caterpillars 424–427 & Fig. 1
see also Gainsville
- Fonscochlea*, Hydrobiidae: artesian spring snails 554, 556, 559–570 & Tab. 2, 576–577, 579
 amphibious species: *F. (Wolfgangia) zeidleri* 553, 556–560 & Tabs 1 & 4 & Figs 1–2, 567 Fig. 10, 569–571 & Figs 11–12, 575–577 & Fig. 18, 579, 581, 583, 592–593 App. 2.4
 large aquatic species 553, 559–564 & Figs 2–5, 587 App. 2.1
F. accepta 554, 556–562 & Tab. 1 & Figs 1–5, 575–577 & Fig. 18, 583, 587 App. 2.1
F. aquatica 553, 556–559 & Tab. 1 & Figs 1–2, 562–564 & Figs 5–7, 575–577 & Fig. 18, 579, 581, 583, 588–589 App. 2.2
 small aquatic 553, 560 Tabs 2–3, 565–569 & Figs 8–10, 590–591 App. 2.3
F. billakalina 556–561 & Tabs 1–3 & Figs 1–2, 565–569 & Figs 8–10, 574, 576, 581, 583, 590–591 App. 2.3
F. conica 553, 557 Tab. 1, 565–568, 580, 584
F. expandolabra sp. nov. 556, 558–560 Figs 1–2 & Tabs 2–3, 565–567 & Figs 8–10, 568, 574, 590–591 App. 2.3
F. variabilis 553, 556–560 & Tabs 1–3 & Figs 1–2, 565–568 & Figs 8–10, 575–576 & Fig. 18, 579–581, 583–584, 590–591 App. 2.3
F. variabilis (= *F. conica*) 565
- Fonscochlea* populations, Julie Springs (JS): genetics of artesian spring snails 571–574 & Figs 13–16
- food habits: feeding mechanisms in bats 440–441, 452–454, 456, 458
see also diets
- foodplants: effects on polymorphic caterpillars 423–435 & Figs 1–3 & Tabs 1–3
- foraminiferan tests: encrusting Bryozoa 468
- forest types: polygyny in ants 533, 536–537, 542–546
Myrtillus-type 537
- Formica*: polygyny in ants 535, 537, 545–546
F. exsecta 536
F. fusca 536
F. lemani 536
F. rufa-group (wood ants) 536
F. s. str. 535–536
F. sanguinea 533, 536, 538 Tab. 1, 540–542 & Tab. 2 & Fig. 2, 544–546, 551 App.
F. spp. 536
F. truncorum 533, 536–538 Tab. 1, 540–542 & Tab. 2 & Fig. 2, 545–546, 551 App.

- 'forms': artesian spring snails 555, 558, 560
Fonscochlea aquatica 562–564
F. variabilis 565, 568
F. ziedleri 570
 Forssa, Finland: polygyny in ants 537
 fossils
 Australian artesian springs 581
 competitive interactions between bryozoans 465–469, 473
 founders: inbreeding of *Callosobruchus maculatus* 484–485, 501
 foxes, bat-eared (*Octocyon*): feeding mechanisms 452
 Francis Swamp: *Fonscochlea* populations 562, 564–565, 569
 Freeling Springs (FR): genetics of artesian spring snails 558 Fig. 1, 577, 586 App. 1
 Fonscochlea populations 560 Tabs 3–4, 562–570 & Figs 7 & 9, 568, 570 & Fig. 12
 FR31 & FR32 565 Fig. 8, 567 Fig. 10, 586 App. 1, 588–593 Apps 2.2–2.4
 FR32 567 Fig. 10, 569 Fig. 11
 Trochidobia populations 572, 574 Fig. 17
 FR31 & FR32 573 Figs 15–16, 596 App. 2.6
 frogs: feeding mechanisms 458
 frugivory: feeding mechanisms in bats 439–441, 443–459 & Figs 1–4 & 6, 462 App. 1
 fumarate hydratase (FUM: E. C. No. 4.2.1.2):
 genetics of artesian spring snails: loci 557 Tab. 1
 Fum 587–588 Apps 2.1–2.2, 590 App. 2.3, 592 App. 2.4
 Fum-1 & *Fum-2* 594 App. 2.5
 *functional morphology: feeding mechanisms in bats 439, 463 & Figs 1–7 & Apps 1–2

 G-tests: foodplant effects on polymorphic caterpillars 427–430 & Fig. 2 & Tab. 2
 Gainesville, Florida: foodplant effects on polymorphic caterpillars 426–427
 Galapagos: study of *Erimys ello* 423–424
 Gastropoda: artesian spring snails 553–596 & Figs 1–20 & Apps 1–2.6
 *gene flow: artesian spring snails 553–554, 574, 580–584
 generations: inbreeding of *Callosobruchus maculatus* 483, 485–486, 497, 500–501
 genetic distances: Australian artesian spring snails 557–558, 560–561 Tabs 2–6, 567, 574–581 & Figs 18 & 20
 see also LDG, Nei and Rogers statistics
 *genetic relatedness: polygyny in ants 533, 538–542 & Tab. 1 & Fig. 2
 *genetic variation: heat shock response in adult *Drosophila* 505
 geographic distances: artesian spring snails 557–558, 561 Tab. 6, 572–576 & Fig. 18, 578 Figs 19–20
 geometrid species: foodplant effects on polymorphic caterpillar 432, 435
 Nemoria arizonaria 432, 435
 glienoid fossae: feeding mechanisms in bats 446 & Fig. 4, 457, 459
Glossophaga: feeding mechanisms in bats 458
 G. longirostris 446 Fig. 4, 450 462 App. 1
 G. soricina 446 Fig. 4, 450 Fig. 7, 454, 462 App. 1
 glucose-phosphate isomerase (*GPI*: E. C. No. 5.3.1.9):
 genetics of artesian spring snails: loci 557 Tab. 1
 GPI 556, 587–588 Apps 2.1–2.2, 590 App. 2.3, 592 App. 2.4, 594 App. 2.5, 596 App. 2.6
 polygyny in ants: locus *Gpi* 540 Tab. 2, 551 App. glutamate-pyruvate transaminase (*GPT*: E. C. No. 2.6.1.2):
 genetics of artesian spring snails: loci 557 Tab. 1
 GPT 556
 GPT-1 563–564
 GPT-2 562, 566
 Gpt-1 & *Gpt-2* 587–588 Apps 2.1–2.2, 590 App. 2.3, 592 App. 2.4, 596 App. 2.6
 grasshoppers: polymorphic correlations 424, 432
 acridid grasshoppers 434
 grazing on bryozoans 475
 see also asteroids, echinoderms and fish
 Great Artesian Basin (GAB): Australia 553–554, 584
 green forms: foodplant effects on polymorphic caterpillars 423–431 & Figs 1–3 & Tabs 1–2, 433–435 & Tab. 3
 habitats
 artesian spring snails 553, 555, 584
 polygyny in ants 533–538 & Tab. 1, 541–547 & Fig. 2
 Hamilton Hill: association with the Blanche Cup system 581
 Hardy-Weinberg equilibrium: polygyny in ants 539
Harpyionycteris: feeding mechanisms in bats 456
 H. whiteheadi 462 App. 1
 *hawkmoths: foodplant effects on polymorphic caterpillars 423
 eyed (*Laotioe populi* and *Smerinthus ocellata*) 423, 435
 head shapes: feeding mechanisms in bats 439, 441, 451, 454, 459
 see also faces, jaws, skulls, SIZE and snouts
 heat shock
 preadult *Drosophila* 517–518, 527–530
 response in adult *Drosophila* 507–508, 510
 heat stress: shock responses in adult *Drosophila* 505–512 & Tab. 1
 *heat-shock responses: preadult *Drosophila* 517–522, 526 Fig. 6, 528–530
 Hermit Hill Springs (HH): genetics of artesian spring snails 558 Fig. 1, 576–577, 582, 584, 586 App. 1
 Fonscochlea populations 559–562 & Tab. 4, 569–570 & Fig. 12
 HH7, HH8, HH9, HH10, HH11 & HH12 561
 Fig. 3, 563 Fig. 5, 586–587 Apps 1 & 2.1
 HH8 567 Fig. 10, 569–570 & Fig. 11, 592–593 App. 2.3
 HH9, HH10 & HH11 561
 HH12 562
 Trochidobia populations 572 Fig. 14, 574
 HH7, HH8, HH10 & HH12 571 Fig. 13, 573
 Fig. 15, 576–577, 582, 584, 594–595 App. 2.5
 hexokinase (HK: E.C.No. 2.7.1.1): genetics of artesian spring snails: loci 557 Tab. 1
 Hk 588 App. 2.2, 592 App. 2.4
Hipposideros: feeding mechanisms in bats
 H. commersoni commersoni 441, 462 App. 1
 H. commersoni gigas 441, 462 App. 1
 H. gigas 441
 H. lankadiva 462 App. 1
 H. pratti 462 App. 1
 H. ruber 462 App. 1

- Hirviharju, Finland: polygyny in ants 538 Tab. 1
- Holocene
- Australian artesian springs 581
 - competitive interactions between bryozoans 468, 471–472 & Tab. 1, 474–475
- Homera* (cyclostomes): Antarctic amphipod grazing 475
- hostplants: effects on polymorphic caterpillars 423 435 & Figs 1–3 & Tabs 1–3
- Hyaenidae (*Proteles*): feeding mechanisms 452, 458
- Hydrobiidae: artesian spring snails 553 555, 579–582
- see also Fonscochlea*, *Potamopygus* and *Trochidobia*
- hydrostatic models: feeding mechanisms in bats 458–459
- see also* anteaters, chameleons, echidna, frogs' tongues and elephants' trunks
- Hylonycteris*: feeding mechanisms in bats 449–450 & Fig. 7, 457
- H. underwoodi* 446 Fig. 4, 462 App. 1
- Hymenoptera: polygyny in ants 534
- hypotheses
- inbreeding of *Callosobruchus maculatus* 484–485, 498, 500
 - macroevolutionary trends 465–466, 472, 474
- Hyttälä, Finland: polygyny in ants 537–538 & Tab. 1
- Ia io*: feeding mechanisms in bats 462 App. 1
- *inbreeding: *Callosobruchus maculatus* 483 502 & Tabs 1–7 & Figs 1–2
- inbreeding coefficients: polygyny in ants 538 539 & Tab. 1, 541
- incisors: feeding mechanisms in bats 442, 444 Fig. 2, 448 450 & Figs 6–7, 454–456, 463 App. 2
- indices
- Callosobruchus maculatus* egg distribution: U-index 488
 - feeding mechanisms in bats 456
 - space 441, 444 Fig. 2, 449–450 & Fig. 7, 453
- insect plant interactions: foodplant effects on polymorphic caterpillars 423 435 & Figs 1–3 & Tabs 1–3
- insectivory: feeding mechanisms in bats 439–440, 444, 451 455, 457–459
- see also Macroctus* and *Rhinolophus*
- insects
- holometabolous: heat shock in preadult *Drosophila* 518
 - social: polygyny 534
- instars
- foodplant effects on polymorphic caterpillars 423–431 & Figs 1–3 & Tabs 1–2, 434–435
 - see also* caterpillars and eggs
 - heat shock in preadult *Drosophila*
 - first 517, 519 520, 523 Fig. 3, 527 528
 - third 517, 519, 521, 524–525 & Fig. 4 & Tabs 3 4
- introductions
- competitive interactions between bryozoans 465–468
 - feeding mechanisms in bats 439–441
 - foodplant effects on polymorphic caterpillars 423 424
 - genetics of artesian spring snails 554–555
 - heat shock
 - preadult *Drosophila* 518
 - response in adult *Drosophila* 506
 - inbreeding of *Callosobruchus maculatus* 484–485
 - polygyny in ants 534–536
 - invertebrates: foodplant effects on polymorphic caterpillars 424
 - see also* butterfly pupae, grasshoppers and snails
 - isocitrate dehydrogenase (*IDH*: E. C. No. 1.1.1.42)
 - genetics of artesian spring snails: loci 557 Tab. 1
 - IDH-1* 568, 570
 - IDH-2* 563–564
 - Idh-1* & *Idh-2* 587–588 Apps 2.1–2.2, 590 App. 2.3, 592 App. 2.4, 594 App. 2.5, 596 App. 2.6
 - polygyny in ants: locus *Idh* 540 Tab. 2, 551 App.
 - isopods: bryozoan predation 475
- jackknifing: polygyny in ants 539
- Jamaica: study of *Erinyis ello* 423 424
- jaws: feeding mechanisms in bats 441, 455–457, 459
- fulcrum 451 453, 459
 - musculature 439, 451–452, 457 459
 - see also* glenoid fossae
- Jersey Springs (JE): genetics of artesian spring snails 558 Fig. 1, 577, 586 App. 1
- Fonscochlea* populations 560 Tabs 3–4, 564 Fig. 7, 566 567 & Fig. 9, 569 570 & Fig. 12
 - JE29 563 Fig. 5, 565 Fig. 8, 567 Fig. 10, 569 Fig. 11, 586 App. 1, 588–591 Apps 2.2–2.4
 - Trochidobia* populations 572–574 & Figs 14–15
 - JE29 571–573 & Figs 15–16, 594–596 Apps 2.5–2.6
- jugal bones: feeding mechanisms in bats 446 & Fig. 4, 457
- Julie Springs (JS): genetics of artesian spring snails 558 Fig. 1, 577, 586 App. 1
- Fonscochlea* populations 560 Tabs 3–4, 564 Fig. 7, 567, 569–570
 - JS28 563 Fig. 5, 565 Fig. 8, 567 Fig. 10, 569 Fig. 11, 586 App. 1, 588–594 Apps 2.2 2.4
 - Trochidobia* populations 571–572 & Fig. 14, 574
 - JS28 571 & Fig. 13, 594–595 App. 2.5
 - JS28 & JS29 573 Fig. 15
- Jurassic: competitive interactions between bryozoans 469, 472–474 & Fig. 3
- KEIs (Key Evolutionary Innovations): competitive interactions between bryozoans 472–473, 476
- Kewson Hill Springs (KH): genetics of artesian spring snails 558 Fig. 1, 576 577, 580 582, 586 App. 1
- Fonscochlea* populations 560 Tabs 3–4, 564 Fig. 7, 567, 569–570 & Fig. 12
 - KH27 563 Fig. 6, 565 Fig. 8, 567 Fig. 10, 569 Fig. 11, 581, 586 App. 1, 588 593 Apps 2.2 2.4
 - Trochidobia* populations 571–573 & Figs 13–15, 572 Fig. 14, 574, 576
 - KH27 571 Fig. 13, 573 Fig. 15, 576, 594 595 App. 2.5
- 'knockdown': heat shock response in adult *Drosophila* 507–508
- Kruskal-Wallis non-parametric ANOVA: inbreeding of *Callosobruchus maculatus* 489, 494–496
- Kuivajärvi, Finland: polygyny in ants 538 Tab. 1
- Kulo, Finland: polygyny in ants 538 Tab. 1
- Kusiaskulo, Finland: polygyny in ants 538 Tab. 1

- laboratory studies
 foodplant effects on polymorphic caterpillars 429–430 & Tab. 2, 435
 heat shock response in adult *Drosophila* 506, 513
 inbreeding of *Callosobruchus maculatus* 484–488, 497
- Lake Eyre Supergroup: genetics of artesian spring snails 553–555, 558 Fig. 1, 580–582, 584, 586 App. 1
see also Beresford, Billa Kalina, Blanche Cup, Coward, Davenport, Elizabeth, Freeling, Jersey, Kewson Hill, Outside, Strangways, Twelve Mile, Warburton and Welcome Springs
- Laotloe populi* (eyed hawkmoths): foodplant effects on polymorphic caterpillars 423–424, 432–434 & Tab. 3
- larvae
 foodplant effects on polymorphic caterpillars 423–435 & Figs 1–3 & Tabs 1–3
 lab-reared 429 430 & Tab. 2, 435
 heat shock
Drosophila buzzatii: *Opuntia* cactus (rots) 506
 preadult *Drosophila* 517–522 & Figs 1–2, 524–525, 527–528 & Tab. 6
 old 517, 519, 521–525 & Figs 2 7 4, 527 529 & Tab. 6
 young 517, 519–523 & Fig. 2 & Tabs 1–2, 527–529 & Tab. 6
see also instars
- Lasiurus borealis*: feeding mechanisms in bats 462 App. 1
- Lasius niger*: polygyny in ants 536, 541
- LDG statistic: genetics of artesian spring snails 557–558, 561 Tab. 6, 576–578 & Fig. 20
- Lepidoptera: foodplant effects on polymorphic caterpillars 423, 434–435
see also, Sphingidae
see also butterflies and moths
- Leptoncyteris*: feeding mechanisms in bats 448–450 & Figs 6 = 7, 452
L. curasoe 462 App. 1
- Leptothorax*: polygyny in ants 535, 541, 544
L. acervorum 533, 536–539 & Tab. 1, 540–542 & Tab. 2 & Fig. 2, 544, 551 App.
L. longispinosus 535
L. sp. A 535
L. spp. 536
- Libyoclanis punctum* (Smerinthini): correlation between foodplant and caterpillar morph 433 Tab. 3
- Lichenophora grignonensis* (cyclostome): competitive interactions 470 Fig. 1
- Lichonycteris*: feeding mechanisms in bats 449–450 & Figs 6–7, 452
L. obscura 462 App. 1
- *life history evolution: *Callosobruchus maculatus* 483–485, 501
- *life stages: heat shock in preadult *Drosophila* 517–518, 527–530
see also eggs, larvae and pupae
- Lioncyteris*: feeding mechanisms in bats 450 Fig. 7
- literature survey: foodplant effects on polymorphic caterpillars 423–424
- lizards: differences in thermal tolerance 518
- localities: heat shock
 preadult *Drosophila* 517–518, 520–526 & Figs 1–6 & Tabs 1–5, 528 530 & Tab. 6
 response in adult *Drosophila* 505–511 & Tabs 1–2
see also Argentina, Australia, Canary Islands and Spain
- loci
 genetics of artesian spring snails 556–557, 561–564, 566, 568, 572, 587–596 Apps 2.1–2.6
 polygyny in ants 539–541 & Tab. 2
see also enzymes
- log transformations
 feeding mechanisms in bats 441–445 & Figs 1–3
 heat shock in preadult *Drosophila* 520
- Lonchophylla*: feeding mechanisms in bats
L. handleyi 450 Fig. 7, 462 App. 1
L. thomasi 450 Fig. 7, 462 App. 1
- *Ludwigia: foodplant effects on polymorphic caterpillars 423, 426, 432, 434–435
L. decurrens 426–428 & Tab. 1
L. leptocarpa 425–431 & Figs 1–3 & Tabs 1–2, 426–427
L. maritima 427
L. octovalvis 45, 425–431 & Figs 1–3 & Tabs 1–2
L. peruviana 426–431 & Figs 1–3 & Tabs 1–2, 435
L. spp. 426–428 & Tab. 1
- Maastrichtian age: Bryozoa 471 Tab. 1
 brachiopod zone 481 App.
- Macroderma gigas*: feeding mechanisms in bats 462 App. 1
- *macroevolution: competitive interactions between bryozoans 465–468, 473, 475–476
- Macroglossinae: feeding mechanisms in bats 441, 443–444, 446, 454, 462 App. 1
- Macroglossini (tribe): correlation between foodplant and caterpillar morphs 433 Tab. 3
see also *Amphion*, *Rhagastis* and *Rhyncholaba*
- Macroglossus*: feeding mechanisms in bats
M. minimus 462 App. 1
M. sobrinus 462 App. 1
- Macrotyus californicus*: feeding mechanisms in bats 444, 462 App. 1
- malate dehydrogenase (MDH: E. C. No. 1.1.1.37)
 genetics of artesian spring snails: loci 557 Tab. 1
MDH-1 566, 568
Mdh-1 & *Mdh-2*: 587 App. 2.1, 589 App. 2.2, 591 App. 2.3, 593 App. 2.4, 595–596 Apps 2.5–2.6
 polygyny in ants: loci: *Mdh-1* & *Mdh-2* 540 Tab. 2, 551 App.
- males
Callosobruchus maculatus 483, 486–488, 490 Tab. 1, 494–498 & Tabs 4 & 6–7, 500
 heat shock
 preadult *Drosophila* 519, 521–525 & Figs 2–5
 response in adult *Drosophila* 508–511 & Figs 1–2 & Tab. 1
- mammals: feeding mechanisms 452, 458 459
 myrmecophageous 452, 456, 458
see also *Chaetophractus*, *Dasybus*, *Myrmecophaga*, *Orycteropus*, *Tachyglossus* and *Tamandua*
- management implications: Australian artesian springs 553, 583–584
- mandibulae, fused: feeding mechanisms in bats 439, 455–456, 458–459

- Manduca* (Sphingini): correlation between foodplant and caterpillar morphs
M. quinquemaculata 433 Tab. 3
M. sexta 433 Tab. 3
- Mann-Whitney U-test: competitive interactions between bryozoans 475
- mannose-phosphate isomerase (*MPI*: E. C. No. 5.3.1.8): genetics of artesian spring snails: loci 557 Tab. 1
MPI 564, 587 App. 2.1, 589 App. 2.2, 593 App. 2.4, 595–596 Apps 2.5–2.6
Mpi-1 & *Mpi-2* 591 App. 2.3
- mass extinctions: a major evolutionary factor 466
- masseters: feeding mechanisms in bats 443, 451 453, 455 456, 458, 462 App. 1
- materials and methods
competitive interactions between bryozoans 468 469
genetics of artesian spring snails 555 558 & Tab. 1
heat shock
preadult *Drosophila* 518–520
response in adult *Drosophila* 506–508, 513
inbreeding of *Callosobruchus maculatus* 485 489
polygyny in ants 536–537
- measurements: feeding mechanisms in bats 441–442, 462–463 Apps 1–2
- medians: analyses of feeding mechanisms in bats 442, 444 Fig. 2, 455
- Megachiroptera: feeding mechanisms 439 449 & Figs 1 6, 451 459, 462 463 Apps 1 2
- Megaderma*: feeding mechanisms in bats 452
M. lyra 453–454, 462 App. 1
- Megalossus woermanni*: feeding mechanisms in bats 462 App. 1
- Melbourne, Australia: heat shock response in adult *Drosophila* 507, 512–513
- Melonycteris*: feeding mechanisms in bats 447
M. melanops 462 App. 1
- Membraniporidra trigemina* (cheilostome): competitive interactions 470 Fig. 1
- Mesozoic: competitive interactions between bryozoans 471 Fig. 2, 476
- methods
feeding mechanisms in bats 441–442
foodplant effects on polymorphic caterpillars 426–427
see also materials and methods
- Metz Gorge (ME): heat shock
preadult *Drosophila* 518, 521–526 & Figs 1–6, 528 Tab. 6, 530
response in adult *Drosophila* 506–507, 509–511 & Figs 1 2, 513
- Mexico: Hydrobiidae 554
- Microchiroptera: feeding mechanisms 439–441, 443 459 & Figs 1–7
- microevolution: competitive interactions 466–467
- Microponella umbraculum* (cheilostome): competitive interactions between bryozoans 470 Fig. 1
- Mimas tilia* (Smerinthini): correlation between foodplant and caterpillar morphs 433 Tab. 3
- models
genetics of artesian spring snails 553–554, 561 Tab. 6, 580–582
hydrostatic: feeding mechanisms in bats 458–459
linear: SAS Institute 520
molars: feeding mechanisms in bats 439–440, 442–456 & Figs 1 & 3 & 5–6, 458 459, 463 App. 2
molluscs (*Partula*): interspecific distances (D) 579
Molossus molossus: feeding mechanisms in bats 452, 462 App. 1
monogyny: polygyny in ants 534, 537, 540, 543–546
Monophyllus: feeding mechanisms in bats
M. plethodon 450 Fig. 7, 462 App. 1
M. redmani 450 Fig. 7, 462 App. 1
morphology
feeding mechanisms in bats 439–440, 442, 458
foodplant effects on polymorphic caterpillars 423–435 & Figs 1–3 & Tabs 1 3
mortalities
Callosobruchus maculatus experiments 488 490 & Tab. 1, 494–495 & Tab. 4, 498 500
competitive interactions between bryozoans 467, 472–473, 475
heat shock: preadult *Drosophila* 527
- moths
differential selection of resting sites 434
see also geometrid species and hawkmoths
‘mounds’: artesian spring snails 553, 555, 576–577, 580 582, 584
- Mt Margaret Spring Complex: Fonscochlea populations 562
- multicoloured forms: foodplant effects on polymorphic caterpillars 423–425 & Fig. 1, 428 & Tab. 1, 430 431 & Fig. 3
- musculature, jaw: feeding mechanisms in bats 439 440, 451 452, 457 459
see also masseters and Temporalis
- Musonycteris*: feeding mechanisms in bats 443–444, 448 451 & Fig. 7
M. harrisoni 462 App. 1
- Mymecophaga*: long-snouted mammals 458
- Myotis*: feeding mechanisms
M. myotis 462 App. 1
M. velifer 462 App. 1
- myrmecophagy: feeding mechanisms 452, 456, 458
see also aardvarks, anteaters, armadillos, echidnas and pangolins
- Myrmica*: polygyny in ants
M. lobicornis 536, 541, 543, 545 546
M. ruginodis 533, 536–538 & Tab. 1, 540–543 & Tab. 2 & Fig. 2, 545–546, 550 App.
M. spp. 535–537
M. sulcinodis 533, 536–538 & Tab. 1, 540 546 & Tab. 2, 550 App.
M. sulcinodis/Tløjärvi 542 Fig. 2
- Myrtillus*-type forest: polygyny in ants 537
- Naurisvuori, Finland: polygyny in ants 538 Tab. 1
- *nectarivory: feeding mechanisms in bats 439–459 & Figs 1–4 & 6–7, 462 463 Apps 1–2
- Nei’s genetic distances: artesian spring snails 557, 560–561 Tabs 2–5, 568
- Nemoria arizonaria*: foodplant effects on polymorphic caterpillars 432, 435
- *nest-site availability: polygyny in ants 533–537, 542 547
- New England: northern limit of *Ludwigia* 426
- *new species: artesian spring snails 553
- New Zealand: bryozoan collections 469
- Noctilio*: feeding mechanisms in bats 450, 452

- N. leporinus* 446 Fig. 4, 462 App. 1
noctuid species: foodplant effects on polymorphic caterpillars 435
Notopteris: feeding mechanisms in bats 447
N. macdonaldi 462 App. 1
nudibranches: bryozoan predation 475
Nyctalus lasiopterus: feeding mechanisms 462 App. 1
Nycteris: feeding mechanisms in bats 452
N. grandis 453–454, 462 App. 1
Nyctimene: feeding mechanisms in bats
N. draconilla 462 App. 1
N. major 446 Fig. 4
- oak leaves and twigs: effects on dimorphic *Nemoria arizonaria* caterpillars 435
occlusal views: feeding mechanisms in bats 441, 446 Fig. 4, 450 Fig. 7, 454–456, 463 App. 2
octanol dehydrogenase (*ODH*: E. C. No. 1.1.1.73): genetics of artesian spring snails: loci 557 Tab. 1
ODH 570, 587 App. 2.1, 589 App. 2.2, 593 App. 2.4
Otocorys (bat-eared fox): feeding mechanisms 452
Oligocene: competitive interactions between bryozoans 472, 481 App.
see also Vicksburgian and Whaingaroan
omnivory: feeding mechanisms in bats 440, 452–453, 455, 458
Onagraceae, *Ludwigia*: foodplant effects on polymorphic caterpillars 426
Ontario: northern limit of *Ludwigia* 426
*ontogenetic colour change: foodplant effects on polymorphic caterpillars 423, 430–431 & Fig. 3
Opuntia (prickly pear cactus rots): *Drosophila* hosts 506, 512, 518, 527, 530
O. ficus-indica 513
O. tomentosa 512–513
Orthoptera: foodplant effects on polymorphic caterpillars 432, 434
Oryctophus: long-snouted mammals 458
Otaian-Altonian age: Bryozoa 471 Tab. 1
Otomops martiensseni: feeding mechanisms 462 App. 1
Outside Springs (OS): genetics of artesian spring snails 558 Fig. 1, 586 App. 1
Fonsochlea populations 562, 564 & Fig. 7, 566 Fig. 9
OS25 563–565 Figs 5–6 & 8, 567 Fig. 10, 586 App. 1, 588–591 Apps 2.2–2.3
Trochidobia populations 572, 574 Fig. 17
OS25 573 Figs 15–16, 596 App. 2.6
*overgrowth: competitive interactions between bryozoans 465, 467–473 & Figs 1–2 & Tab. 1, 476
Oxford Downs (OD): heat shock
preadult *Drosophila* 518, 521–526 & Figs 1–6, 528 Tab. 6, 530
response in adult *Drosophila* 506–507, 509 Fig. 1, 511–512 & Fig. 2
- palates: feeding mechanisms in bats 439–440, 442–449 & Figs 1–2 & 5–6, 451, 453–455, 458–459, 463 App. 2
Paleocene: competitive interactions between bryozoans 475
see also Danian and Selandian
pangolins: feeding mechanisms 452
Paonias myops (Smerinthini): correlation between foodplant and caterpillar morphs 433 Tab. 3
Papilio demodocus: correlation between foodplant and caterpillar morphs 434
parameters: inbreeding of *Callosobruchus maculatus* 483, 492–493 Figs 2–3, 497–500
Partula (molluscs): interspecific distances (D) 579
Pateria miniata (asteroid): bryozoan grazing 475
PAUP computer program: genetics of artesian spring snails 557
pears, prickly cactus (*Opuntia* spp.): *Drosophila* hosts 512–513, 518, 527, 530
peptidase (E. C. No. 3.4.*.*): polygyny in ants: locus *Pep* 540 Tab. 2, 550–551 App.
peptidase (leucine-alanine) (*PEP-LEU-ALA*: E. C. No. 3.4.11): genetics of artesian spring snails: loci 556–557 & Tab. 1
Pep-Leu-Ala-1, *Pep-Leu-Ala-2* & *Pep-Leu-Ala-3* 595 App. 2.5
Pep-Leu-Ala-2 & *Pep-Leu-Ala-3* 598 App. 2.6
peptidase (leucine-glycine-glycine) (*PEP-LEU-GLY-GLY*: E. C. No. 3.4.11): genetics of artesian spring snails: loci 556–557 & Tab. 1
Pep-Leu-Gly-Gly 556–557 & Tab. 1, 566, 587 App. 2.1, 589 App. 2.2, 591 App. 2.3
PEP-LEU-GLY-GLY-1 566
peptidase (valine-leucine) (*PEP-VAL-LEU*: E. C. 3.4.11): genetics of artesian spring snails: loci 556–557 & Tab. 1
PEP-VAL-LEU-1 & *PEP-VAL-LEU-2* 566
Pep-Val-Leu 587 App. 2.1, 589 App. 2.2
Pep-Val-Leu-1 & *Pep-Val-Leu-2* 591 App. 2.3, 593 App. 2.4
percentiles: data from bat feeding mechanisms 442, 444 Fig. 2
Peropteryx kappleri: feeding mechanisms 462 App. 1
Peru: Sphingidae larval forms 426
pests, stored products: *Callosobruchus maculatus* 483–484, 501–502
phenetic analyses: genetics of artesian spring snails 557, 562–565 & Figs 6–8, 567, 571–572 & Fig. 16, 580
*phenotypic variation: *Callosobruchus maculatus* 483, 498, 501
Philampelini (tribe): correlation between foodplant and caterpillar morphs 433 Tab. 3
see also *Eumorpha*
phosphoglucosyltransferase: polygyny in ants: (locus *Pgm* E. C. 2.7.5.1) 540 Tab. 2, 551 App.
phosphoglucosyltransferase (*PGM*: E. C. No. 5.4.2.2): genetics of artesian spring snails: loci 557 Tab. 1, 563, 566, 570, 587 App. 2.1, 589 App. 2.2, 591 App. 2.3, 593 App. 2.4, 595–596 Apps 2.5–2.6
PGM-1 563
PGM-2 566, 570
Pgm-1 & *Pgm-2* 587 App. 2.1, 589 App. 2.2
Pgm-2 591 App. 2.3, 593 App. 2.3, 595–596 Apps 2.5–2.6
phosphoglucuronate dehydrogenase: polygyny in ants: locus *Pgd* (E. C. No. 1.1.1.44) 540 Tab. 2, 550–551 App. 6-phosphoglucuronate dehydrogenase (*6-PGDH*: E. C. No. 1.1.1.44): genetics of artesian spring snails: loci 557 Tab. 1
6-pgdh 587 App. 2.1, 589 App. 2.2, 591 App. 2.3, 593 App. 2.4, 595–596 Apps 2.5–2.6

- phosphoglycerate kinase: polygyny in ants (locus P_{gk} E. C. 2.7.2.3) 540 Tab. 2, 550–551 App.
- Phylloncteris*: feeding mechanisms in bats 450, 452, 454–456, 458
- P. poeyi* 450 Fig. 7, 454, 462 App. 1
- Phyllostomidae: feeding mechanisms in bats 441, 443–444 & Fig. 1, 448, 456, 462–463 Apps 1–2
- Phyllostomus hastatus*: feeding mechanisms in bats 440, 452, 462 App. 1
- pierid butterflies: pupal dimorphisms 432
- pink forms: foodplant effects on polymorphic caterpillars 423–425 & Fig. 1, 428–431 & Tab. 1 & Fig. 3, 435
- pink-and-yellow forms: foodplant effects on polymorphic caterpillars 423–425 & Fig. 1, 428–431 & Tab. 1 & Fig. 3
- *plant-insect interactions: foodplant effects on polymorphic caterpillars 423–435 & Figs 1–3 & Tabs 1–3
- ‘phytophagic’ effects 432
- ‘phytoscopic effects’ 432
- Pleistocene: Australian artesian springs 581
- Pliocene age: Bryozoa 471 Tab. 1
- poinsettia*: effects on *Eumorpha ello* 433
- pollen: nectarivorous bats 440, 458
- polydomy: polygyny in ants 533, 535
- polygyny: habitat succession in boreal ants 533–551 & Figs 1–2 & Tabs 1–2 & App.
- *polymorphism: foodplant effects on caterpillars 423–424, 432–434 & Tab. 3
- *polyphenism: foodplant effects on polymorphic caterpillars 423, 432, 434–435
- polypides: competitive interactions between bryozoans 472
- poplars, European: eyed hawkmoths 423–424
- populations
- artesian spring snails 553–554, 556, 558, 560–565 & Tabs 2–5 & Figs 3–7, 567–568 & Fig. 10, 572–574 & Figs 14–17, 576–577, 579–584, 587–596 Apps 2.1–2.6
- heat shock
- preadult *Drosophila* 517–520, 522, 526–530
- response in adult *Drosophila* 505–511 & Figs 1–2 & Tab. 1, 513
- inbreeding of *Callosobruchus maculatus* 483–487, 489–493 & Tabs 1 & 3 & Figs 2–3, 495–502 & Tabs 5 & 7
- polygyny in ants 533–535, 537–541 & Tab. 1, 543–545, 550–551 App.
- Potamopyrgus*, Hydrobidae: Australian artesian springs 582
- preadult *Drosophila*: resistance to thermal stress 517–531 & Figs 1–6 & Tabs 1–6
- predation
- an evolutionary factor 466–467, 475–476
- see also asteroids, echinoderms, fish, isopods, nudibranches and pycnogonids
- foodplant effects on polymorphic caterpillars 434–435
- premolars: feeding mechanisms in bats 448–449 & Fig. 6, 452–454, 458–459, 463 App. 2
- Priabonnian age: Bryozoa 471 Tab. 1, 481 App.
- principal components analyses: feeding mechanisms in bats 441–443
- Protambulyx strigilis* (Smerinthini): correlation between foodplant and caterpillar morph 433–434 & Tab. 3
- proteins, heat shock (hsp)s
- preadult *Drosophila* 517, 528–529
- response in adult *Drosophila* 512
- Proteles*: feeding mechanisms 452, 458
- pteropids: feeding mechanisms in bats 441
- Pteropus scapulatus*: feeding mechanisms in bats 441, 446 Fig. 4, 462 App. 1
- pupae
- butterfly: polymorphic correlations 424
- heat shock
- preadult *Drosophila* 517–529 & Figs 1–2 & 4 & 6 & Tabs 1 & 3 & 5–6
- response in adult *Drosophila* 508, 510–511 & Tab. 2
- purine nucleoside phosphorylase (PNP E.C.No. 2.4.2.1.): genetics of artesian spring snails: loci 557 Tab. 1
- PNP 563–564, 587 App. 2.1, 589 App. 2.2, 593 App. 2.4
- pycnogonids: bryozoan predation 475
- Pygoderma bilabiatum*: feeding mechanisms in bats 462 App. 1
- *queen numbers: polygyny in ants 533–537, 540–547
- regression analyses
- competitive interactions between bryozoans 469
- feeding mechanisms in bats 442–443, 445–446 & Fig. 3, 448
- genetics of artesian spring snails 561 Tab. 6, 574–575 & Fig. 18, 577–578 & Fig. 19
- relatedness: polygyny in ants 533–534, 538–541 & Tab. 1, 543–545
- resistance: heat shock
- preadult *Drosophila* 517–520, 527–530
- response in adult *Drosophila* 505–507, 511–513
- results
- competitive interactions between bryozoans 469
- feeding mechanisms in bats 442–450 & Figs 1–7
- foodplant effects on polymorphic caterpillars 427–431 & Tabs 1–2 & Figs 2–3
- genetics of artesian spring snails 558–579 & Tabs 2–6 & Figs 1–20
- heat shock
- preadult *Drosophila* 520–526 & Figs 1–6 & Tabs 1–5
- response in adult *Drosophila* 508–511 & Figs 1–2 & Tabs 1–2
- inbreeding of *Callosobruchus maculatus* 489–590 & Tabs 1–7 & Figs 1–2
- polygyny in ants 541–542 & Fig. 2
- Rhagastis olivacea* (Macroglossini): correlation between foodplant and caterpillar morphs 433 Tab. 3
- Rhinolophus*: feeding mechanisms in bats
- R. blasii* 462 App. 1
- R. luctus* 462 App. 1
- R. rufus* 454
- Rhyncholaba acteus* (Macroglossini): correlation between foodplant and caterpillar morphs 433 Tab. 3

- Roger's modified genetic distances: genetics of artesian spring snails 557–558, 560–565 & Tabs 2–5 & Figs 3–4 & 6–8, 567–569 & Fig. 11, 571 & Fig. 13, 573–576 & Figs 16–18
 see also Wright's modification
- rostra: feeding mechanisms in bats 440–441, 443, 451, 456, 458
- rots, prickly pear cactus (*Opuntia*): *Drosophila* host 506, 518, 527
- Runangan age: Bryozoa 471 Tab. 1, 481 App.
- Saccolaimus*: feeding mechanisms in bats 450
S. peli 462 App. 1
- Sahel, west Africa: *Callosobruchus maculatus* 484
- sampling
 genetics of artesian spring snails 555, 586 App. 1
 polygyny in ants 537–539 & Tab. 1 & Fig. 1
- Santonian age: Bryozoa 471 Tab. 1, 481 App.
- SAS Institute: linear models 520
- Scotorycteris zenkeri*: feeding mechanisms in bats 441, 449, 462 App. 1
- Scotophilus*: feeding mechanisms in bats 450
S. nigrita gigas 462 App. 1
- seeds, cowpea: inbreeding of *Callosobruchus maculatus* 484–489, 499–500
- Seitsemien, Finland: polygyny in ants 537–538 & Tab. 1
- Selandian age: Bryozoa 471 Tab. 1, 475
- *selection: inbreeding of *Callosobruchus maculatus* 483, 485–486, 499–501
- shell morphology: artesian spring snails 559 & Fig. 2, 565, 567–568, 571, 580, 584
- SIGMAPLOT: analyses of feeding mechanisms in bats 442
- SIZE (a composite size character): analysis of nectivorous bats 442, 445 Fig. 3
- skulls: feeding mechanisms in bats 440–441, 450 Fig. 7, 455–456, 459, 463 App. 2
- Smerinthini (tribe): correlation between foodplant and caterpillar morphs 433 Tab. 3
 see also *Compsogene*, *Laothoe*, *Libyoclanis*, *Paonias*, *Protambulyx* and *Smerinthus*
- Smerinthus ocellata* (eyed hawkmoths): foodplant effects on polymorphic caterpillars 423–424, 433–434 & Tab. 3
- snails
 artesian spring 553–596 & Figs 1–20 & Apps 1–2.6
 polymorphic correlations 424
- snouts: feeding mechanisms in bats 440, 451–452, 458
- *social insects: polygyny in ants 533–534
- Sorbitol dehydrogenase (*SDH* E.C.No. 1.1.1.14) 557 Tab. 1, 587 App. 2.1, 589 App. 2.2, 591 App. 2.3, 593 App. 2.4, 595 App. 2.5
- South Carolina: *Eumorpha fasciata* northern limit 426
- space index: feeding mechanisms in bats 441, 444 Fig. 2, 449–450 & Fig. 7, 453
- Spain, Cordoba (COR): heat shock
 preadult *Drosophila* 518, 521–526 & Figs 1–6, 528–529 Tab. 6
 response in adult *Drosophila* 507, 509 Fig. 1, 511 Fig. 2, 513
- Spearman rank correlation coefficient: inbreeding of *Callosobruchus maculatus* 489, 497 Tab. 7
- species: artesian spring snails 553–555, 580, 584
 amphibious: *F. (Wolfgangia) zeidleri* 553, 556–560 & Tabs 1 & 4 & Figs 1–2, 567 Fig. 10, 569–571
 large aquatic 559–565 Figs 2–7, 587–589 App. 2.1–2
 see also *Fonscochlea accepta* and *F. aquatica*
 small aquatic 560 Tabs 2–3, 565–569 & Figs 8–10, 579, 590–591 App. 2.3
 see also *Fonscochlea billakalina*, *F. conica*, *F. expandolabra* sp. nov. and *F. variabilis*
Trochidobia 571–573 & Figs 14–16
 validation and clarification 558–559 & Figs 1–2, 579–580, 584, 587–596 Apps 2.1–2.6
- Sphaeronycteris toxophyllum*: feeding mechanisms in bats 462 App. 1
- Sphingidae: foodplant effects on polymorphic caterpillars 423, 432–435 & Tab. 3
 see also
Erinys, *Eumorpha* and *Laothoe*
 tribes: Dilophonotini, Macroglossini, Philampelini, Smerinthini and Sphingini
 Sphingini (tribe): correlation between foodplant and caterpillar morphs 433 Tab. 3
 see also *Acherontia*, *Manduca* and *Sphinx* 433 Tab. 3
Sphinx ligustri (Sphingini): correlation between foodplant and caterpillar morphs 433 Tab. 3
- sponges: encrusting bryozoan competitors 473
- 'spot colonies': encrusting bryozoans 475
- spring groups: Australian artesian 553–596 & Figs 1–20 & Apps 1–2.6
 see also Beresford, Big Cadnaowie, Billa Kalina, Blanche Cup, Coward, Davenport, Elizabeth, Emerald, Francis Swamp, Freeling, Hermit Hill, Jersey, Julie, Kewson Hill, Mt Margaret, Outside, Strangways, Twelve Mile, Warburton and Welcome Springs
- spruce-dominated taiga: polygyny in ants 533, 537, 543–544, 546
- statistical tests
 competitive interactions between bryozoans see Mann-Whitney U-test and regressions
 foodplant effects on polymorphic caterpillars 429–430 Fig. 2
 see also Fisher's exact test, G-test and William's correction
- heat shock
 preadult *Drosophila* 520
 response in adult *Drosophila* 508
 see also arcsine-square-root transformations and Tukey's multiple comparison test 508
- inbreeding of *Callosobruchus maculatus* 488–489
 see also ANOVAs, arcsine transformations, Bartlett-Box *F*-, chi-squared, Kruskal-Wallis, Spearman rank correlation coefficient, Student-Newman-Keuls (SNK) and Wilks' lambda
- STATVIEW (Abacus Concepts): analyses of feeding mechanisms in bats 442
- stenodermatine bats: feeding mechanisms 441
- *stored products pests: *Callosobruchus maculatus* 483–484
- Strangways Springs (SS): genetics of artesian spring snails 553, 558 Fig. 1, 560 Tab. 4, 563–570 & Figs 5–12, 573–574 Figs 15–17, 577, 581, 583–584, 586 App. 1

- Fonscochlea* populations 560 Tab. 4, 562–566 & Figs 7–8, 568–570 & Figs 11–12, 577, 581, 583–584, 586 App. 1
 SS24 567 Fig. 10, 569 Fig. 11, 592–593 App. 2.4
 SS24 & SS30 563 Fig. 6, 565 Fig. 8, 567 Fig. 10, 586 App. 1, 588–591 Apps 2.2 & 2.3
Trochidobia populations 574 Fig. 17, 576
 SS24 & SS30 573 Figs 15–16, 596 App. 2.6
 *stress resistance: heat shock in preadult *Drosophila* 517–522 & Fig. 1, 526–529
 Student–Newman–Keuls (SNK) range test: inbreeding of *Callosobruchus maculatus* 489, 496
Sturnira lilium: feeding mechanisms in bats 440, 462 App. 1
 stylar shelves: feeding mechanisms in bats 439, 441–442, 447–448 & Fig. 5, 453, 463 App. 2
 substrata: bryozoan 470 Fig. 1, 472, 474–475
 see also bivalves, brachiopods, echinoids and foraminiferans
 successional cycles: polygyny in ants 533, 535–536, 542–543, 546
 survival: heat shock
 preadult *Drosophila* 521–522 & Figs 1–2, 526–528 & Fig. 6 & Tab. 6
 response in adult *Drosophila* 508–513 & Figs 1–2 & Tabs 1–2
 Susimäki, Finland: polygyny in ants 538 Tab. 1
 swallowtail butterflies: pupal dimorphisms 432
 Sweden: polygyny in ants 544
Syconcyrtis: feeding mechanisms in bats 449 Fig. 6, 454
 S. australis 448, 462 App. 1
 SYSTAT-5.0, statistical analysis: genetics of artesian spring snails 557

Tachyglossus: long-snouted mammals 458
Tadarida brasiliensis: feeding mechanisms in bats 462 App. 1
 taiga: polygyny in ants 533, 535–537, 542–546
 see also forest types
 Täktom, Finland: polygyny in ants 537–538 & Tab. 1
Tamandua: long-snouted mammals 458
Taphozus nudiventris: feeding mechanisms in bats 462 App. 1
 teeth: feeding mechanisms in bats 439–458 & Figs 1–7
 tooth areas 440, 447–448 & Fig. 5, 458–459, 463 App. 2
 see also cheekteeth
 *temperature resistance: heat shock response in adult *Drosophila* 505
 temperatures: heat shock in preadult *Drosophila* 517–528 & Figs 2–6 & Tabs 1–5
 temporalis: feeding mechanisms in bats 455, 457, 463 App. 2
 termites: *Proteles* diet 452–453
 Tertiary: divergence of *Trochidobia* 580
 thegosis: feeding mechanisms in bats 439, 450 Fig. 7, 455–458
 thermal stress: heat shock
 preadult *Drosophila* 517–521 & Fig. 1, 526–529 & Fig. 6
 response in adult *Drosophila* 505–507, 509 Fig. 1, 511–513 & Fig. 2
 times, developmental: heat shock in preadult *Drosophila* 517–521, 523 Tab. 2 & Fig. 3
 tongues: feeding mechanisms in bats 439–441, 451–453, 455–456, 458–459
 Tortonian age: Bryozoa 471 Tab. 1
Trachops: feeding mechanisms in bats 452
 T. cirrhosus 462 App. 1
 treatments: *Callosobruchus maculatus* experiments 487
 Triassic: competitive interactions between bryozoans 473
 triose-phosphate isomerase (*TPI*: E.C. 5.3.1.1): genetics of artesian spring snails: loci 557 Tab. 1
 TPI 556, 587 App. 2.1, 589 App. 2.2, 591 App. 2.3, 593 App. 2.4, 595–596 Apps 2.5–2.6
Trochidobia, Hydrobiidae: artesian spring snails 553–554, 556–557, 561 Tab. 5, 571–572, 576, 580
 T. inflata 557–559 & Tab. 1 & Figs 1–2, 561 Tab. 5, 571–574 & Figs 15–17, 582, 596 App. 2.6
 T. minuta 557–559 & Tab. 1 & Figs 1–2, 561 Tab. 5, 571–574 & Figs 15–16, 583, 596 App. 2.6
 T. punicea 553, 556–559 & Tab. 1 & Figs 1–2, 561 Tab. 5, 571–573 & Figs 13–16 & 18, 580, 583, 594–596 Apps 2.5–2.6
 T. smithi 553, 557–558–559 & Figs 1–2, 561 Tab. 5, 571–576 & Figs 15–18, 581, 596 App. 2.6
Tubulipora (cyclostome): fish grazing 475
 Tukey's multiple comparison test: heat shock
 preadult *Drosophila* 520–521, 526
 response in adult *Drosophila* 508, 510
 Twelve Mile Springs (TM): genetics of artesian spring snails 558 Fig. 1, 586 App. 1
 Fonscochlea populations 560 Tab. 4, 562, 564 & Fig. 7, 566 Fig. 9, 568, 570 & Fig. 12
 TM26 563–565 & Figs 5–8, 567 Fig. 10, 569 Fig. 11, 586 App. 1, 588–593 Apps 2.2–2.4
 Trochidobia populations 572, 574 Fig. 17
 TM26 573 Figs 15 & 16, 596 App. 2.6

 umbellifer hosts: survival of *Papilio demodocus* larvae 434
 ungulates: feeding mechanisms 454
 U.S.A.
 competitive interactions between bryozoans 471 Fig. 1, 480–481 App.
 see also Arizona, Florida and South Carolina

Vampyrum: feeding mechanisms in bats 452
 V. spectrum 453–454, 462 App. 1
 variables
 Callosobruchus maculatus studies 483–485, 487–490 & Tab. 1, 494 & Tab. 4, 496–498 & Tab. 7, 500
 heat shock, response in adult *Drosophila* 5006–512
 polygyny in ants 533–534, 541–542
 variance: genetics of artesian spring snails 576
 ANOVA 576–577
 *viability: heat shock in preadult *Drosophila* 517, 520–521, 527
 Vicksburgian age: Bryozoa 471 Tab. 1, 481 App.
 Vitaceae: effects on Sphingidae polymorphic caterpillars 426

 Warburton Springs (WA): genetics of artesian spring snails 553, 558 Fig. 1, 577, 581, 584, 586 App. 1
 Fonscochlea populations 560 & Tabs 3–4, 565–567 & Figs 8–9, 569–570 & Figs 11–12
 WA23 565 Fig. 8, 567 Fig. 10, 569 Fig. 11, 586 App. 1, 592–593 App. 2.4

- Trochidrobia* populations 574
- weights: *Callosobruchus maculatus* 483, 489 Tab. 1, 494–500 & Tabs 4 & 6–7
- Welcome Springs (WS): genetics of artesian spring snails 558 Fig. 1, 577, 586 App. 1
- Fonscochlea* populations 560 & Tab. 3, 562, 566–568 WS1, WS2 & WS3 565 Fig. 5, 586–587 Apps 1 & 2.1
- WS2 565 Fig. 8, 567 Fig. 10, 590–591 App. 2.3
- Trochidrobia* populations 572 Fig. 14
- WS1 & WS3 571 Fig. 13, 573 Fig. 15, 594–595 App. 2.5
- Whaingaroan age: Bryozoa 471 Tab. 1, 481 App.
- Wilks' lambda: inbreeding of *Callosobruchus maculatus* 491
- Williams correction: G-tests 427
- workers: polygyny in ants 533–535, 538–540 & Tab. 1, 543–545
- Wright's modification: Roger's modified genetic distances 557, 560–563 & Tabs 2–5 & Fig. 3, 563 Fig. 6, 565 Fig. 8, 569 Fig. 11, 571 Fig. 13, 573 Fig. 16
- *xueheat shock: response in adult *Drosophila* 505
- yellow forms: foodplant effects on polymorphic caterpillars 424–425 & Fig. 1, 428 Tab. 1
- Ylöjärvi, Finland: polygyny in ants 537–538 Tab. 1, 543
- zooids: competitive interactions between bryozoans 471–472, 474–475
- zygomata (width): feeding mechanisms in bats 439, 442, 444 & Fig. 2, 451–452, 457–459, 463 App. 2

